DIFFERENCES IN PERSONALITY AND THE SHARING OF MANAGERIAL TACIT KNOWLEDGE: AN EMPIRICAL ANALYSIS OF PUBLIC SECTOR MANAGERS IN MALAYSIA

Abstract

Purpose

This study aims to identify differences in knowledge-sharing mechanisms and personality among expert, typical and novice managers within the Malaysian Public Sector. Strengthening the knowledge sharing function is essential for enabling public institutions around the world to be more productive.

Design/methodology/approach

This quantitative study involves 308 employees from management and professional groups within 98 local authorities in the Malaysian Local Government. Stratified random sampling techniques were used and the sampling frame comprised 1000 staff using postal surveys. Data analyses were carried out using Analysis of Variance (ANOVA) and correlations in order to test the research hypotheses.

Findings

The findings reveal that expert managers are more proactive in sharing their knowledge, particularly those with the personality traits of conscientiousness and openness. These two personality traits were also related to expert behaviours such as thoroughness, responsibility and persistence, which led to work competency and managerial success.

Originality/value

This study provides theoretical insights into how managerial tacit knowledge differs and can accumulate, depending on the personality traits of middle managers. The paper shows the different mechanisms of knowledge sharing, tacit knowledge and personality among expert, typical and novice managers. Practically, this study is important for guiding senior managers in their attempts to identify the most appropriate personalities of their middle managers. This study found that the expert group was higher in conscientiousness, openness and overall personality traits compared with the typical and novice groups. The paper also highlights the value of sharing managerial tacit knowledge effectively.

Keywords

Knowledge sharing, personality traits, tacit knowledge

Introduction

This paper builds on current understandings of different mechanisms for sharing managerial tacit knowledge among managers in the context of public sector organizations (Mooradian, Renzl and

Matzler, 2006; Wang and Noe, 2010; Amayah, 2013). The paper provides a unique insight into the personality of public managers with different levels of managerial tacit knowledge. This is important because previous research has demonstrated that personality is not only related to performance in political organizations (Witt, Kacmar, Carlson and Zivnuska, 2002) but also influences knowledge sharing behaviour (Martzler, Renzi, Muller, Herting and Mooradian, 2008) that has the potential for indirectly influencing the accumulation of managerial tacit knowledge. Our study focuses on the three factors of agreeableness, conscientiousness and openness from the Big Five Inventory (BFI) of personality on the basis of prior predictions and empirical findings. For example, Martzler, Renzi, Muller, Herting, and Mooradian (2008) found that these three traits influence knowledge sharing behaviour. Furthermore, Witt, Kacmar, Carlson, and Zivnuska (2002) found that these three traits were also related with contextual performance in a political organization. No relationships were found between extraversion/neuroticism and knowledge sharing behaviours or performance. Other previous research on the effects of personality traits on knowledge sharing and team performance, and motivation, also revealed that conscientiousness, agreeableness and openness consistently emerge as the main predictors, whereas the other traits are regarded as less significant (Cho, Li, & Su, 2007).

To strengthen performance and retain talented people within the public sector requires successful management techniques and methods like those developed in the private sector (Common, 2011). Just as the private sector has become increasingly dependent on the management of knowledge as part of its drive towards maintaining a competitive advantage (Silvi and Cuganesan, 2006), the public sector is also becoming increasingly dependent on knowledge sharing (Willem and Buelens, 2007; Massaro, Dumay, and Garlatti, 2015) for increasing efficiencies, creativity and

innovation (Mahbob, 2010; Reychav, Stein, Weisberg, and Glezer, C., 2012)). Knowledge sharing is a mechanism for sharing personal knowledge with others and this enables employees to enhance their skills and competences. It also helps employees to increase the value of their work (Grant, 1996; Spender, 1996). This occurs because of innovations that evolve when people share their personal knowledge with others and this in turn affects job performance (Nonaka and Takeuchi, 1995) as well as converting general ideas into innovative products and services (Jackson et al., 2006). Knowledge sharing also provides a channel for knowledge flow among employees and this is particularly critical for tacit knowledge because participants must feel comfortable sharing their mental models, values, beliefs, tentative thoughts and intuitions (Nonaka, Toyama, and Nagata, 2000; Platts & Yeung, 2000). This is particularly the case with the advent of social web tools that create a fast and effective platform for managers to share tacit knowledge (Panahi, Watson, & Partridge, 2013).

While there have been a plethora of studies of personality associated with workplace variables including job satisfaction (Judge , Higgins,Theresan, 2000), employee selection (Anderson & Cunningham-Snell, 2000), work attitudes (Judge et al., 1999) and job performance (Barrick & Mount, 1991), there have been a dearth of studies that have focused on exploring different levels of tacit knowledge among expert, typical, and novice manager groups within local government, particularly in relation to knowledge sharing practices. This study aims to contribute to that gap in our understanding.

Such development opportunities in the public sector are especially important for those Asian countries that have a weak workplace culture of performance (Berman *et al.,* 2013). A shift in the capacity and effectiveness of service delivery within the Asian public sector can only happen

by placing a stronger emphasis on the human resource management (HRM) function (Puppim De Oliveira, Jing, and Collins, 2015) in order to strengthen the relationship between performance, people and strategy (Berman, 2015). Linking rewards to performance, providing competitive salaries, use of appraisal systems, and recruiting well-qualified staff are all associated with an effective performance orientation in the Malaysian public service (McCourt and Foon, 2007; Berman *et al.,* 2013). Strengthening the knowledge sharing function through HRM procedures is critical for enhancing public institutions in both the East and the West (Berman, 2015). As highlighted above, our study extends previous research in this area by examining knowledge sharing mechanism in association with the role that personality plays in the transfer and accumulation of managerial tacit knowledge.

This is theoretically compelling for several reasons. First, it contributes to current public sector management literature and practice by demonstrating the strategic value of knowledge sharing in the public sector through identifying well qualified public managers, increasing productivity among less productive employees and through providing professional training for relevant staff (Massaro, Dumay and Garlatti, 2015; Henttonen, Kianto and Ritala, 2016). Second, it reveals specific ways of transferring knowledge via people through personalization mechanisms and technology through codification processes, thus overcoming bureaucratic blockages. Third, it identifies different levels of managerial tacit knowledge classified as expert, typical and novice. Fourth, it shows the different personality traits of public managers who have varied preferences towards mechanisms for sharing knowledge, and who themselves have accumulated varying levels of managerial tacit knowledge according to our classification of expert, typical and novice.

Theoretical Development

There continues to be a growing interest in knowledge management research because it can improve the quality of public services (Hartley and Allison, 2002; Currie and Suhomlinova, 2006; Al Ahbabi, Singh, Balasubramanian, & Gaur, 2019) and can be an effective approach to supporting individuals and teams in accomplishing tasks (Davenport, De Long and Beers, 1998). However, management of knowledge has received limited attention in the field of public sector management (Haque, and Turner, 2013; Chen and Hsieh, 2015; Puppim De Oliveira, Jing and Collins, 2015). This is a major oversight because the barriers to knowledge management implementation in the public sector are restricted by bureaucratic structures, by political, cultural and individual behaviour, and by the nature of knowledge, all of which need greater understanding (Hartley and Benington 2001; Kang, Kim, and Chan, 2008).

Scholars have demonstrated that a person's willingness to share knowledge is influenced by psychological traits such as personality (Cabrera, Collins, and Salgado, 2006; Martzler et al., 2011; Borges, Bernardi, & Petrin, 2019). Yet, there have been a dearth of studies conducted on personality in public management (Davis, Patte, and Tweed, 2007; Oberfield, 2009; Filiz and Battaglio Jr., 2017). This is despite the fact that some research has shown that different personalities of managers can impact upon the efficacy of government decision-making (Davis, Patte, and Tweed, 2007; Filiz and Battaglio Jr., 2017). It is believed that further studies on personality have the potential to enable managers to understand worker identity and to explain how managers behave and respond to social interactions differently in various contexts (Maynard-Moody and Musheno, 2003). This study therefore explores knowledge sharing practices and personality traits among successful and less successful managers thereby filling an

important gap in the literature on the importance of personality when implementing knowledge sharing practices in the public sector. We anticipate that this research will not only have a positive impact on the literature, but also on practitioners and policymakers wanting to implement knowledge sharing in order to leverage public sector performance (Al Ahbabi, Singh, Balasubramanian, & Gaur, 2019; Borges, Bernardi, & Petrin, 2019).

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In summary, this study is the first in public management and in a developing world context to link these specific three dimensions to the identification of expert, typical and novice managers through knowledge sharing. Practically, this study provides important guidance to help HR functions within public services to identify an effective mechanism for the sharing of tacit knowledge, considering the role of personality, particularly among successful managers.

Knowledge management in the context of the Malaysian Public Sector

In keeping with the demands of the knowledge-based economy, the Malaysian government has introduced the Malaysia K-Economy Master plan that emphasizes the knowledge-based economy to improve the national economy's productivity (Salleh, Richardson, and Narayanan, 2003). The K-economy Master plan functions to increase levels of economic and human development in economies that are driven by human capital, and a wealth of information, skills and knowledge (Economic Master Plan, 2002). By having this master plan, the government aims to create rapid economic growth with an annual average rate of 7 per cent until the year 2020 (Knowledge-Based Economy Master Plan, 2002). This growth is driven by an increase in the application of knowledge to production and the development of new knowledge-intensive industries. As part of the effort for public sector institutions to be knowledge based organizations, the government has recognized that it needs to modify the behaviour of public servants. This is consistent with a long-standing commitment to public sector reform, enhancing the performance of the Malaysian public service (McCourt and Foon, 2007; Berman *et al.*, 2013). In particular, public servants arguably need to create knowledge worker characteristics such as the willingness to add value, improve themselves and adopt a more holistic view of their function within the workplace (Ali, 2001).

The implementation of the Malaysia plan focuses on frontline government agencies such as local governments (LGs). As frontline agencies, LGs have a close relationship with the public needs and they need to provide the best value for the community (Hartley and Allison, 2002). LGs also have a responsibility to share knowledge via technology and human resource management tools (Zhang, Dawes, and Sarkis, 2005). The development of this study on identifying the different

knowledge sharing mechanisms and personality traits at various levels of managerial tacit knowledge is intended to help public managers create further organizational benefits, particularly for HR departments.

Knowledge sharing mechanisms

Knowledge Sharing Mechanisms refer to a method, procedure or process involved in knowledge sharing within the organization using both information technology (IT) mechanisms and a personalization mechanism approach (Chai, Gregory, and Shi, 2003). The argument is that public sector employees gain work experience through practices, whereas disseminating knowledge relies on human interactions and technology, although knowledge sharing mechanisms are not mutually exclusive (Wang and Noe, 2010; Pee and Kankanhalli, 2016). Thus, this paper examines the two mechanisms referred to briefly above: first, IT using institutional codification; second, personalization using institutional personalization.

(i) *Institutional codification mechanisms* refer to the codification of knowledge sharing that are institutionalized in the routines and structures of an organization. This mechanism is most related to organizations that emphasize the use of IT in knowledge management to create electronic repositories for storing, searching and retrieving intellectual capital. It includes databases, use of templates, broadcast emails and forums, an expertise directory and a standardized methodology (Boh, 2007). Knowledge can be codified and distributed through knowledge repositories with the management goal that when someone learns something, everyone else in the organization knows it.

(ii) *Institutionalized personalization mechanisms* focus on personalization of knowledge sharing that is institutionalized in the routine and structure of the organization. In personalization, knowledge is viewed as a practice that encourages participation in networks (Mischen, 2015) and where people can learn through dialogue. This strategy accepts that knowledge is closely tied to the daily activities of employees and needs to be shared mainly through face-to-face contacts and informal networks, informal conversations and meetings conducted around, for example, the water cooler at work (Hansen, Nohria, and Tierney, 1999). These mechanisms enable learning processes particularly related to practical experience by sharing knowledge created through tacit experiences and explicit rules and procedures (Ma, Huang, Wu, Dong, and Qi,, (2014), which are commonly understood under the banner of 'organizational learning'.

Tacit knowledge

Sternberg (1988) proposed that tacit knowledge is a factor of practical intelligence. It is a function of the individual's practical ability to learn from and to solve everyday problems to adapt, select and shape his or her environment in the pursuit of personal goals. Tacit knowledge is knowledge that one needs to work effectively in an environment, but one that is not explicitly taught or verbalised (Collins, 2010). Tacit knowledge is measured using work related scenarios one might encounter on the job. It was presented in the form of 'if-then' statements that describe procedures followed in various kinds of everyday situations; for instance, in situations such as knowing what to say to whom, knowing when to say it and knowing how to say it for maximum effect (Sternberg et al., 2000).

Consistent with Wagner and Sternberg's (1987) conceptualization of tacit knowledge in managerial success, this study considers managerial tacit knowledge as personal knowledge gained from practical experience in managing self, managing others and managing tasks. Managers who have a high level of tacit knowledge can arguably absorb problem-solving applications at a higher rate than other members. Managing self refers to knowledge about how to manage oneself daily to maximise productivity. It can be related to interpersonal practical, know-how demonstrated in self-organizational facets of performance. Managing others refers to knowledge about managing subordinates and social relationships. It implies that managers have interpersonal practices and know-how demonstrated in self-organizational facets of performance. Managing tasks refers to knowledge about how to establish careers, how to enhance reputations and how to convince superiors about ideas or products. Managers who possess tacit knowledge about managing tasks have practical know-how about how to accomplish specific work-related tasks in the most productive and appropriate way (Colonia-Willner, 1998; Ranucci, dan Souder, 2015).

In the field of management, it has been widely accepted that tacit knowledge is closely related with experts and that knowledge is acquired from individual personalized experiences (Mahmud, 2006; Collins, 2010). In this regard, it is crucial to identify the characteristics of experts and the learning process needed to become an expert.

Studies on experts

Commonly, experts exercise their knowledge by calling on their extensive years of experience in a great variety of contexts to recognize patterns and then selectively retrieve relevant information and arrange it to form an appropriate response (Ericsson, 2014). Examples of successful and less

successful managers' possession of tacit knowledge can be found in various fields such as management, the military, academic psychology, sales, banking, general college life and clerical work (Zaccaro et al., 1991; Sternberg et al., 2000; Hedlund et al., 2003; Armstrong and Mahmud, 2008). This literature suggests that successful leaders possess well organized, domain specific knowledge that allows them to respond flexibly to a range of situations.

Experts normally spend more time than novices in planning and solving problems (Ericsson, 2014). Novices tend to identify the solution quickly but need to restart their work. Because experts can recognize the deep structure of the problem, they can then solve the problem by working forwards, whereas novices are likely to solve problems by working backwards (Sternberg et al., 2000). Furthermore, it has been found that experts are more likely than novices to attend to problem information that is situationally appropriate (Zaccaro et al., 1991; Wagner, 1987; Fiske, Kinder and Larter, 1983). Sternberg's work into the nature of tacit knowledge is particularly noteworthy (e.g. Sternberg *et al*., 1993; Sternberg *et al*., 2000; Sternberg & Grigorenko, 2001b; Sternberg & Wagner, 1993; Wagner & Sternberg, 1986) because it provides a framework and a sound methodological basis from which tacit knowledge can be studied. From the preceding discussion we first hypothesize that:

> H1: There are differences in levels of accumulated managerial tacit knowledge across expert, typical and novice manager groups.

Knowledge-sharing within organizations can be classified into informal versus formal and personal versus impersonal mechanisms (Alavi and Leidner, 2001). Many organizations employ codification and personalization strategies for knowledge sharing through databases and person-to-person contact (Hansen, Nohria, and Tierney, 1999). Codification mechanisms associated with

knowledge sharing tend to be institutionalized in the routines and structures of an organisation. The purpose of these mechanisms is to capture specialist knowledge within knowledge bases that other specialists can access. Essentially, these mechanisms allow knowledge held by individuals and/or groups to be captured and made available to the wider property of the organisation (Earl, 2001; Hansen, Nohria, and Tierney, 1999). Personalization mechanisms associated with knowledge sharing tend to be institutionalized through organizational structures in ways that promote individuals who have the necessary knowledge and experience to share that knowledge and provide guidance to less experienced professionals through conversation and information sharing across their social networks (Halverson, 2004). Evidence shows that experts in particular project work, for example, would naturally share their knowledge and experience among their team members in a variety of ways. For instance, this might occur: in meetings with high level staff; through project reviews; through a senior person coordinating all staffing needs; by having a common project director across a variety of projects; by introducing cross staffing across projects; by setting up a community of practice; and through support centres and staff deployment policies (Borgatti & Cross, 2003; Menon & Pfeffer, 2003). Previous studies (e.g. Armstrong and Mahmud, 2008; Grigorenko et al., 2000; Wagner and Sternberg, 1987) have found that knowledge acquired and practiced by experts appears to be different from that of typical and novice managers, due to the long-term process of knowledge accumulation. Boh (2007) also found that using experts was more effective than using other employees for help and advice when problems were encountered. It is further noted that expert tacit knowledge is also ofetn shared across various digital platforms using social web toolssuch as blogs, Wikis, Podcasts/Vodcasts, social networking sites, etc. (Panahi, Watson, & Partridge, 2013).

This leads us to our second hypothesis:

> H2: There are differences in preferences for knowledge sharing mechanisms across expert, typical and novice manager groups.

This study places a major focus on institutional codification and institutional personalization as mechanisms for knowledge sharing (Boh, 2007). The argument is that public sector employees gain work experience through practices, whereas disseminating knowledge relies on the human and technological approach, although knowledge sharing mechanisms are not mutually exclusive (Barton and Srivastava, 2002). Technology is adopted in this study because of its capacity to store knowledge and to exchange knowledge globally across time and geographical space (Cho, Li, and Su, 2007; Pee and Kankanhalli, 2016), as local governments are geographically dispersed. Some individuals also prefer to share their valuable knowledge in electronic networks, as they perceive that it enhances their professional reputations and they value helping others (Wasko and Faraj, 2005). A study on knowledge sharing in the Malaysian public sector indicates that the most widely-used knowledge sharing initiatives were e-mail systems, inter-agency activities and the use of ICT, followed by support of top management (Suppiah and Sandhu, 2011).

Both the human approach and electronic knowledge repositories are used to facilitate individuals' knowledge sharing towards creativity and innovation (Reychav, Stein, Weisberg, & Glezer, 2012). Selection of the appropriate knowledge sharing mechanism within an organization is dependent on the type of knowledge, either tacit or explicit (Dixon, 2000). According to Argote and Ingram (2000), explicit knowledge is much easier to share than tacit knowledge.

Nevertheless, this study argues that tacit knowledge can be shared through different mechanisms, as hypothesized below:

H3: There is a positive relationship between knowledge sharing mechanisms and managerial tacit knowledge.

Personality traits

Personality is an individual's characteristic pattern of thought, emotion and behaviour, together with the psychological mechanisms behind those patterns (Funder, 2001). Of particular interest to the present study are conscientiousness, agreeableness, and openness because these three traits are known to be associated with knowledge sharing behaviours (Martzler et. al., 2008) and to be related to contextual performance (Witt, Kacmar, Carlson and Zivnuska, 2002). Cho, Li, and Su, (2007) also found that agreeableness and conscientiousness were the two personality traits linked most closely to personal ability, motivation and knowledge sharing. While there have been many studies of personality associated with a variety of workplace variables (Barrick and Mount, 1991), there is limited research into knowledge sharing in relation to frameworks of personality or temperament (Mooradian, Renzl, and Matzler, 2006).

People who are characterized as agreeable are good natured, forgiving, courteous, helpful, generous, cheerful, tolerant, modest and cooperative (Barrick and Mount, 1991). An agreeable person is naturally inclined to help others and their tendency is towards cooperation and collaboration rather than competitiveness (Witt, Kacmar, Carlson and Zivnuska, 2002). Successful knowledge-sharing is thought to rely on these tendencies due to good interpersonal relationships being formed with colleagues and supervisors (De Vries, Den Hooff, and De

Ridder, 2006; Martzler et al., 2008). Agreeableness also fosters trust and this too has been linked to knowledge sharing (Abrams and Cross, 2003).

Characteristics of conscientious individuals are competence, reliability, responsibility, organization, hardworking, careful, self-disciplined and achievement-oriented (Barrick and Mount, 1991). Knowledge sharing is known to involve organizational citizenship, which encourages people to focus on the job rather than on self-interest and personal goals. The findings of Judge et al. (1999) demonstrate a positive relationship between managerial success and conscientiousness. Conscientiousness is also thought to be the most important attribute related to the suitability of applicants to managerial positions (Dunn et al., 1995) and this may be due to their innate abilities of self-control, planning, organizing, and carrying out tasks (Costa and McCrae, 1992). A natural willingness to get involved in complex work situations and a hunger for new experiences will likely lead to higher levels of accumulated managerial tacit knowledge.

Openness to experience reflects an active imagination, intellectual curiosity, originality and independence of judgment (Costa and McCrae, 1992). Open people are curious about inner and outer worlds, encourage new ideas, and have positive and negative ideas compared with individuals who have a low level of openness (Costa and McCrae, 1992). People with high levels of openness also have positive attitudes towards new learning activities (Johnson and Thomas, 2007), engage in higher levels of knowledge sharing, are more willing to seek the insights of others (Cabrera, Collins, and Salgado, 2006), and are more open to the sharing of ideas and expertise (Wasko and Faraj, 2005).

Based on the preceding discussion, we would postulate that levels of agreeableness, conscientiousness, and openness will be positively related to: the extent to which managers will engage in knowledge sharing mechanisms; levels of accumulated managerial tacit knowledge; and the managerial levels that that individuals reach within public sector organizations.

This leads to the following hypotheses:

H4: There are differences in levels of personality traits across expert, typical and novice manager groups.

H5: There are positive relationships between the agreeable, conscientious, and openness personality traits, knowledge sharing mechanisms, and levels of accumulated managerial tacit knowledge.

Method

This study adopted a positivist research design using a hypothetico-deductive approach. Self-administered questionnaires were distributed to respondents by mail and direct contact. Quantitative methods were then used to analyse the data in order to either support or refute the research hypotheses. We sampled a large number of respondents in order to allow us to generalize our findings to the wider target population.

Population

The population of interest were 1364 employees from the Management and Professional Group (MPG) of 98 local authorities in the Malaysian Local Government. The MPG in the context of the Malaysian public sector refers to middle level managers involved in policy making in relation to human resource management, financial management, and socio-economic development within the organization. Middle level managers have been identified as playing a key role in the

organizational knowledge creation process enabling them to become future leaders (Nonaka and Takeuchi, 1995).

Sample

Stratified random sampling techniques were used across these 98 local authorities in the Malaysian Local Government and the sampling frame comprised of 1000 staff using postal surveys. This method was employed to ensure that members from each stratum were included in the sample. These 1000 questionnaires were sent to the 98 LGs according to the population in each local government that consist of expert, typical and novice managers in the grade position of 41 to 52.

Insert Table 1 about here

Of the 358 completed questionnaires returned, only 308 were useable. This indicates an overall response rate of 31%. For questionnaires, a 30% return is seen as being satisfactory and more than 50 per cent is thought to be good (Gillham, 2000). The sample was drawn from the management and professional group who are involved in policy-making for the human resource management, financial management and social economic development departments of the country. The group can be categorised into three types of managers: experts, typical and novices between the range of managers in the grade position of 41 to 52. The public service sector in Malaysia uses grade positions to reflect the group of services and posts held by civil servants. When an employment post is advertised or a position is offered, employees within the public service are placed within a grade. Most government agencies have three main categories of positions in the public service: first, support groups involve Grade 1 until Grade 16, which

includes general assistants and civil servants; econd, support groups who manage administrative tasks start from grade 17 to grade 40. Both groups require relatively low levels of academic qualifications such as primary or secondary school leavers. Third, management and professional roles are from grade 41 until grade 54; this includes an officer, head of department or a director of an agency, all of whom require academic qualifications of at least a Bachelor's degree with other related competency qualifications. After these three groups, there are further categories of the most top ranked roles in public service administration. Hence, this study selected respondents among management and professional groups from the Malaysian local government. This refers to the middle management between senior leader and support staff (Ismail & Yusof, 2009). The group included people holding grade 41, grade 44, grade 48, grade 52 and grade 54 roles. Of the three-hundred-and-eight respondents who returned completed questionnaires, 238 (77%) were classified as being from a typical manager group, 38 (12%) were classified as being from a novice management group, and 32 (11%) were classified as expert managers.

Measures

Knowledge Sharing Mechanisms. Items are divided into two groups: institutional codification and institutional personalisation. A 5-point likert scale was used for reporting agreement/disagreement for each item. Boh (2007) who explored mechanisms for sharing knowledge in project-based organizations originally developed the instrument. Sample items include "Important mechanisms for sharing knowledge in my organization are: 1. Word of mouth sharing through senior staff; 2. Personal networks; 3. Collaboration tools".

Tacit Knowledge. Wagner and Sternberg's (1985) Tacit Knowledge Inventory for Managers (TKIM) was administered to all respondents to determine their levels of managerial tacit knowledge. Theoretically, expert managers are expected to respond differently to lower level managers due to the content and organization of their tacit knowledge. Most previous studies have focussed on comparing the responses of different groups of people such as business managers to scenarios depicted in the TKIM against scores obtained from a successful group (e.g. business experts) within that particular field, referred to as the "expert-novice comparison". According to Wagner and Sternberg (1985), the inventory was developed to measure sub-scales of tacit knowledge referred to as: managing self; managing task; and managing others. It refers to tacit knowledge as being based on the content of the situation.

Scoring of tacit knowledge is calculated by comparing the scores of novice and typical managers with the mean score of the expert group. There are various ways of identifying expert managers normally associated with seniority, high levels of success, and high levels of experience within a management context (Wagner and Sternberg, 1987; Williams, 1991; Kerr, 1991). The present study identified the group of experts within the Malaysian Public Sector in the same way as previous studies (Mahmud, 2006; Armstrong & Mahmud, 2008) by identifying those that had received the Service Excellence Award (SEA) for management in the past three years.

A sample scenario from the TKIM is "Rate the quality of the following strategies for handling the day-to-day work of a manager on a 1 to 7-point scale". Sample item responses to this scenario include: 1) Think in terms of tasks accomplished rather than hours spent working;

2) Use a daily list of goals arranged according to your priorities; 3) Reward yourself upon completion of important tasks for the day. This instrument has been used in a variety of studies in recent years in both the public sector (Armstrong and Mahmud, 2008), the private sector (Armstrong and Li, 2017), education (Elliott et al., 2011), banking (Colonia-Willner, 1998) and accounting (Tan and Libby, 1997).

Personality. The big five inventory (BFI) was used to measure the five broad dimensions of personality (John, Naumann, and Soto, 2008). The five factors include openness, conscientiousness, extraversion, agreeableness and neuroticism. This research on the five personality traits focuses on three specific personality measurements (agreeableness, conscientiousness and openness) rather than five, as explained above. Sample items include: "I see myself as someone who: 1. Does a thorough job; 2. Is a reliable worker; 3. Tends to be disorganised."

Reliability analysis and validity

Internal consistency reliability estimates for the inventories used in the research are shown in Table 2. Reliabilities for the Knowledge Sharing Mechanism Inventory (KSM), the Tacit Knowledge Inventory for Managers (TKIM), and the Big Five Inventory of Personality (BFI) were all acceptable for total overall scores, with reliabilities of .81, .77 and .86, respectively. Reliabilities of the individual sub-scales ranged from .73-.82 for the KSM, .71-.77 for the TKIM and .71-.86 for the BFI.

Evidence of construct validity for the various instruments is provided by supporting the hypothesised relationships with selected variables in previous studies (e.g. Suppiah and Sandhu

(2011); Sternberg et al. (2000); Colonia-Willner (1998); and Hahn, Gottschling & Spinath (2012).

Insert Table 2 about here

Results and analysis

On the basis that three of our research hypotheses (H1, H2 & H4) were concerned with determining whether the means of three groups (expert, typical & novice managers) were different in terms of levels of accumulated managerial tacit knowledge (H1), knowledge sharing mechanisms (H2) or personality types (H4), we employed the technique of Analysis of Variance (ANOVA) to test these hypotheses. *Post-hoc* multiple comparisons using Scheffe tests were then used to explore the differences between each of the three groups in order to reduce the risk of Type 1 errors (Field, 2009). Prior to conducting these analyses, Levene's tests were conducted to examine the homogeneity of the variance in these groups (Pallant, 2007). ANOVA is entirely appropriate for conducting comparisons of groups in this way (Hair et al, 2010; Sekaran, 2003) compared with more sophisticated methods of analyses, such as structural equation modelling, that are more suited to analyzing paths between multiple sets of variables when building theoretical models (Peyrot, 1996).

To test hypothesess 3 & 5 we conducted Pearson correlations. This was chosen as the most appropriate method of measuring a linear relationship between two continuous variables compared with other techniques such as regression that are used to test whether one or more predictor variables are related to a criterion variable (Tabachnick & Fidell, 1996).

Exploring the level of managers' accumulated managerial tacit knowledge (LAMTK)

Insert Table 3 about here

The result of the ANOVA shown in Table 3 indicates that there were significant differences in the level of managers' accumulated managerial tacit knowledge (LAMTK) across the three groups of respondents. These comparisons indicated that the mean score for experts (mean = 1.13, sd = 0.342) were significantly different from that of novices (mean = 1.44, sd = 0.321) and typical groups (mean =1 .42, sd = 0.411). As explained by Sternberg et al. (1995), because TKIM is a deviation score, the smaller the deviation value, the stronger the agreement with experts. Thus, the findings indicate that the mean of experts is lower than the other two groups, demonstrating that the tacit knowledge of expert managers is higher. Hypothesis (H1) is therefore supported. This suggests that the level of managerial tacit knowledge among experts was higher than that of novices and typical managers, although there were no significant differences in LAMTK between typical and novice groups.

Exploring the KSM and personality traits among different groups of respondents

An ANOVA test was performed which identified the main mechanisms of knowledge sharing and personality traits were significantly different among respondents. Thus, to explore the differences among the groups of respondents in terms of KSM and PT, a comparative analysis was conducted for these two constructs.

Insert Table 4 about here

Table 4 illustrates the significant differences between expert, typical and novice groups in terms of knowledge sharing mechanisms. This shows that the mechanisms of sharing knowledge among expert, typical and novice are different. Hypothesis (H2) suggesting that there are differences in knowledge sharing mechanisms among managers (categorised as experts, typical and novices) is therefore supported. Further analysis was carried out of knowledge sharing mechanism constructs to explore the specific differences between these mechanisms, namely institutional codification, institutional personalisation and overall knowledge sharing.

Insert Table 5 about here

Table 5 illustrates that the means of experts are different from novice and typical managers. The credibility and intention of experts to share their knowledge can be seen in the higher means for the mechanisms of institutional codification and institutional personalisation. However the expert group also has a higher mean for knowledge sharing in total, compared with the typical and novice groups.

Insert Table 6 about here

Correlation tests were performed to gain insights into the relationships among all the variables in the KSM, namely institutional codification and institutional personalisation, with the total tacit knowledge. The results of the Pearson correlations shown in Table 6 indicate a significant relationship between variables, although relatively weak, this parallels the results of other studies and provides support for hypothesis 3.

Two dimensions of knowledge sharing mechanism were statistically related to TK, as illustrated in Table 6. Specifically, TK was significantly correlated with institutional personalisation ($r = -.132$, $p<0.05$) and institutional codification ($r = -.136$, $p<0.01$). In the TKIM, scoring can have a positive or negative value to indicate the level of closeness of data to the experts' group. Obviously, in studies of TKIM, it is common to have mixed findings in a single data set (see Sternberg et al., 1995; Wagner 1987; Colonia-Willner, 1998).

The results show that KSM variables have relationships with TK that are consistent with the expectation that tacit knowledge must be codified before it can be shared with others (Nonaka and Takeuchi, 1995). The correlation coefficients emerged in a negative direction with a medium association between KSM and TK. These relationships offer an insight that the proposed mechanism for sharing knowledge is applicable to accumulated managerial tacit knowledge. Managers in this study believed that their tacit knowledge was increased by involvement with institutional codification and personalisation.

Insert Table 7 about here

Table 7 shows the results of the ANOVA testing and the differences between sub-traits of personality among respondents. Two traits of personality and overall personality traits were shown to have significant differences among the expert, typical and novice groups. However, there were no differences in agreeableness among these three groups. Hypothesis 4 suggesting differences in personality traits between managers (categorised as experts, typical and novices), is therefore partially supported. To identify the differences between each group, a *post hoc* comparison using a Scheffe analysis was made to distinguish the scores between groups. The

Scheffe test is an accurate test for the equal variance in the group and the most common method for reducing the risk of Type 1 error (Field, 2009).

Insert Table 8 about here

The results of the comparison between groups of respondents (Table 8) revealed that personality traits for the expert group were more positive than for the novice and typical groups. The expert group was more conscientious about their managerial work (mean =4.012) compared with the typical group (mean =3.6765) and novice group (mean =3.5105). Similarly, openness for the expert group (mean =4.3477) was also higher than for the typical and novice groups, both of which had a similar level of openness (mean =3.9806 and mean =3.9441, respectively). For the overall personality traits, the expert group had a significantly higher score (mean =4.309) than the typical group (mean =4.0192) and novice group (mean =3.9586). This implies that the expert group was higher in conscientiousness, openness and overall personality traits compared with the typical and novice groups.

Insert Table 9 about here

This section presents the results concerning the relationship between personality traits, knowledge sharing practices, and managerial tacit knowledge among local government managers. The results indicate that the correlation analysis was significant between personality traits and a sub-scale of managerial tacit knowledge, including managing self ($r = -.101$, $p<0.05$), managing task ($r = 0.116$, $p<0.05$) and managing others ($r = -.167$, $p<0.01$). The relationship between overall personality traits and a subscale of knowledge sharing mechanism also indicate a positive relationship. The results demonstrate overall that personality traits have a significant relationship with institutional codification ($r = 0.271$, $p<0.01$) and institutional personalisation (r

= 0.244, $p<0.01$). These results illustrate that personality traits significantly predicted managerial tacit knowledge and knowledge sharing mechanisms and H5 was therefore accepted. However, some of these variables (managing self and managing others) exist in a negative direction. As the nature of calculation for managerial tacit knowledge was produced by the difference in the scores of novice and typical managers from that of experts, the value of TKIM can appear in two circumstances, either positive or negative. In the real data analysis, the sign was meaningless and ignored because of the absolute value adopted, meaning that the negative or positive signs in tacit knowledge and subscales of tacit knowledge do not indicate the direction of the variables, but rather, explain the position of the tacit knowledge scores relative to the expert group.

Discussion and conclusions

The results of this study confirmed that the level of managerial tacit knowledge among experts was higher than that of non-experts, which is consistent with Armstrong and Mahmud (2008) and Hedlund et al. (2003). A detailed explanation of these findings can be found in the following three sub-sections.

The differences in knowledge sharing mechanism among managers

This study offers several important theoretical contributions. First, our study combines two highly studied, yet infrequently linked, aspects of knowledge management: knowledge sharing mechanisms and managerial tacit knowledge. Although management and psychology scholars acknowledge the importance of knowledge sharing, very few studies have examined this relationship (Suppiah and Sandhu, 2011). This is one of few studies that examines the views on mechanisms of knowledge sharing and managerial tacit knowledge at different levels in the

public sector, as the accumulated managerial tacit knowledge of experts differs from that of typical and novice managers. In a public sector context of short-term contracts and the use of consultants, the challenge to different public sector organizations is to capture and share the knowledge of a more transient workforce. The theoretical importance of this study is showing how to acquire managerial tacit knowledge that can be used by managers in managing work successfully (Ericsson, 2014).

The results of this study indicate that overall knowledge sharing mechanisms differ between respondents, in that experts have a greater tendency to share their knowledge than typical or novice managers, who have different levels of knowledge sharing. The findings illustrate that the expert, typical and novice groups differ in institutional codification and institutional personalisation. Institutional codification and institutional personalisation also differ between expert, typical and novice managers, illustrating that experts have a greater preference for sharing their knowledge at the organizational level. This implies that those in the expert group are more likely to disseminate their knowledge widely to others in either an organizational context or through personal contact. In both approaches, codification using databases, templates, broadcasts, e-mail, and expertise directories was employed more by experts rather than those in the typical and novice groups. This is similar to personalisation approaches, which consist of meetings among high level staff, project reviews and coordinating projects, or project directors that experts are more likely to use than typical and novice managers. Such differences are likely to be due to experts being in position as successful managers rather than as typical and novice groups. To be nominated as successful managers they should possess certain characteristics and capabilities of doing work, including the capabilities to handle work-related technology and

personal communication skills. The advantages of experts over novices when performing in specific domains have been attributed mainly to higher levels of knowledge and more integrated knowledge.

The differences in personality traits among managers

Previous studies show personality can influence knowledge sharing behaviour (Mooradian, Renzl, and Matzler, 2006). However, such studies have not examined the different personalities of managers as well as their various levels of managerial tacit knowledge. In this knowledge age, managing different levels of tacit knowledge has become a key strategy for work and human resource competitiveness (Ericsson, 2014). The important findings from the test of personality traits among respondents indicate that those in the expert group were more concerned with personality compared with those in the typical and novice groups. More specifically, the personality traits of conscientiousness and openness differed most among the respondents, while there were no differences in terms of agreeableness. The experts were shown to score highly on the conscientiousness and openness to experience traits, while typical and novice managers did not differ in terms of these two traits. This finding is consistent with Zaccaro et al. (1991) who concluded that the main qualities separating successful leaders from non-leaders is social intelligence, consisting of social perceptiveness and behavioural flexibility. Specifically, the personality of managers, particularly a leader's willingness to address novel and ambiguous problems, made it easier for them to identify solutions to problems in an uncertain environment. In the organizational context, social intelligence attributes are improved by competencies related more directly to problem-solving, including information-gathering and encoding, planning and implementation, solution monitoring, and administrative skills. Each of these individual

attributes and problem-solving skills is a necessary addition to social intelligence in predicting effective organizational leadership (Zaccaro et al., 1991).

The study finds that the traits of conscientiousness and openness to experience were relevant to the characteristics of the expert group. The characteristic of conscientiousness was related to competence, reliability, responsibility, and the capacity to work hard which were possessed to the greatest extent by the expert group, followed by the typical and novice groups. We also find that the openness trait was higher in the expert group than in the typical and novice groups, reflecting that managers are imaginative, and have greater intellectual curiosity and originality in carrying out work. At the same time, agreeableness was not different, probably because most of the managers were helpful and followed the regulations in their organizations. Whether expert, typical or novice managers, agreeableness tended to predict whether people were inclined to help others and whether they strived to produce work according to the present policies and regulations.

Interaction of personality traits, knowledge sharing mechanisms and managerial tacit knowledge among local government managers

The study found positive relationships of both personalisation and codification of knowledge sharing mechanisms with personality traits. This relationship was extended by identifying the roles of personality traits in interaction with subscales of managerial tacit knowledge. These three-sub scales of TKIM were found to interact, significantly, with personality traits. It was found that personality traits have a relationship with managing self, managing task and managing others. Theoretically, this study finds that based on the nature of

managerial tacit knowledge, which requires managers to use professional judgement, agreeableness and consciousness were important for managing others, managing self and managing tasks, while openness was highly important for managing others but not for other subscales of TKIM. The paper indicates that traits such as being achievement-oriented, organised, careful and detail-oriented may necessarily influence the managing self, managing tasks and managing others to perform well in their jobs.

Implications, future research and limitations of the study

In this section we will discuss the theoretical and managerial implications, future research suggestions and limitations of the study. The outcomes of the study have a number of implications for both future research and management practice. As the first study of its kind that has combined literature on knowledge sharing mechanisms and managerial tacit knowledge in the Malaysian public sector, the findings open up several interesting new avenues for further research. Firstly, the study has demonstrated that levels of managerial tacit knowledge, known to be generated in the intimacy of lived experience (Baumard, 2001), represent a significant factor differentiating novice, typical, and expert managers. This finding is consistent with previous examinations of differences in tacit knowledge between novice and expert groups (e.g. Patel, Arocha, and Kaufman, 1999; Nestor-Baker, 1999), although few have identified reasons for these differences. More research to identify reasons that account for variations in the ability to accumulate tacit knowledge was called for more than 20 years ago (e.g. Reber, 1989; Colonia-Willner, 1998) and yet still there are a paucity of studies in this area. A potential contributing factor revealed in the study is differences in preferred ways of disseminating and sharing knowledge at the organizational level using codification and personalization approaches. Whilst

this offers an interesting line of inquiry, further research is needed in this area. In particular, future research would benefit from focusing on specific mechanisms used by managers in acquiring tacit knowledge regardless of whether they are expert, typical or novice.

Another significant finding from the present study is that expert managers had not only accumulated more tacit knowledge than other managerial groups, but these managers also scored more highly on both conscientiousness and openness to experience traits of personality. Conscientiousness relates to competence, reliability, responsibility and the capacity for hard work, whereas openness relates to imagination, originality in carrying out work and greater intellectual curiosity. These dominant personality characteristics may account for why expert managers also had a greater tendency to share their knowledge more widely than novice and typical manager groups. Thus, knowledge, as a manifestation of practical intelligence based on experience, and personality may serve as a more relevant factor in understanding managerial effectiveness. However, it is possible that some personalities are more important than others depending on the organizational context. Again, further research is needed in this area.

With respect to providing support to human resource strategies, several implications can be drawn from the results of the study. First, knowledge sharing mechanisms can help management to share managerial tacit knowledge before staff retire or move to other departments. This is important, particularly in policy-making areas of public service where officials move departments frequently. At the same time, the study provides an empirically compelling example of Malaysian local government officers who benefit from longevity and continuity. It would be interesting to compare different levels of government, central, regional

and local, both within and between different countries in terms of different bureaucratic structures and employment practices.

By identifying the relevant mechanisms in the public sector, policy makers can emphasise the mechanisms that improve knowledge sharing activities in their organizations in rotation, retirement and succession planning programs. Further, as public sector organisations seek to move away from bureaucratic structures within which knowledge is jealously guarded, and to be more outward-focused, the importance of knowledge sharing for public sector reform is highlighted.

With respect to management training and talent development, the findings of this study give an indication for managers that staff should be trained in the techniques of intimation and continuously practice successful strategies within organizations. The findings of this study demonstrate that managerial tacit knowledge that is practiced and used in daily managerial work is related to managerial success. Managerial tacit knowledge is often difficult to share through procedures and contextual situations, but practically applied techniques could enable knowledge to be shared unconsciously. Thus, management training could create a learning platform for managerial success.

Another procedural aspect that was found to be helpful for using managerial tacit knowledge is the provision of information about the criteria of successful managers. This managerial tacit knowledge enables recognition of experts and talented employees who have valuable knowledge that can be shared with others. This study enables managers to develop criteria and identify successful support groups for sharing valuable tacit knowledge.

It needs to be noted that this study also has several limitations. Firstly, we adopted a cross-sectional design which does not allow us to establish the direction of causality. Future studies might use longitudinal methods to further clarify the relationships between our study variables. Secondly, our study variables were derived from the same sources (e.g. management and professional group members) which can lead to the potential for common method variance (Podsakoff, MacKenzie & Podsakoff, (2012). Finally, our findings are based on data from Malaysian local governments that are representative of the public sector. Future studies might therefore consider the collection of data from other sectors such as the private sector to determine whether there are differences across industrial sub-cultures..

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Table 1: Sampling of Respondents

Stars Rating System	**Number of Local Governments**	**Total Respondents (Grade 41 to 52)**	**Sample Respondents (Grade 41 to 52)**	**Number of Distributing Questionnaire (Grade 41 to 52)**
4	10 City Hall & City Council	600	127 (21%)	480 (48%)
3	24 City Council & Municipal	360	80 (22%)	240 (24%)
2	46 Municipal & District Council	368	81 (22%)	248 (24.8)
1	18 District Council	36	9 (25%)	32 (3.2)
Total	**98**	**1364**	**297 (22%)**	**1000 (100%)**
Actual Respondents		**308 (31%)**		

Table 2: Reliability analysis for the KSM, TKIM and BFI

Variables	n	Mean	SD	α
KSM:				
1. Institutional Codification	308	3.98	0.56	0.82
2. Institutional Personalization	308	4.00	0.53	0.73
3. Knowledge Sharing Mechanism	308	3.99	0.55	0.81
TKIM:				
1. Managing Tasks	308	1.28	0.58	0.75
2. Managing Others	308	1.44	0.64	0.75
3. Managing Self	308	1.47	0.59	0.71
4. Total Tacit Knowledge	308	1.39	0.40	0.77
BFI:				
1. Agreeableness	308	4.28	0.46	0.74
2. Openness	308	4.01	0.54	0.85
3. Conscientiousness	308	3.69	0.63	0.71
4. Personality Traits	308	4.04	0.43	0.86

Table 3: Comparisons of LAMTK scores for expert, typical and novice groups

Group	n	Mean	Std. Deviation	df	F	Sig
Expert	32	1.13	0.342	305	7.563	.001
Novice	38	1.44	0.321			
Typical	238	1.42	0.411			

*$p<0.05$

Table 4: The results of ANOVA for KSM among expert, typical and novice groups (n =308)

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Institutional Codification	Between Groups	2.672	2	1.336	4.316	.014
	Within Groups	94.406	305	.310		
	Total	97.078	307			
Institutional Personalization	Between Groups	3.292	2	1.646	6.048	.003
	Within Groups	83.018	305	.272		
	Total	86.311	307			
Knowledge Sharing Mechanism	Between Groups	1.564	2	.782	5.816	.003
	Within Groups	40.994	305	.134		
	Total	42.557	307			

*P<0.05

Table 5: The results of KSM for expert, typical and novice (n =308)

Variables	Group	N	Mean
Institutional Codification	Expert	32	4.2375
	Typical	238	3.9756
	Novice	38	3.8579
Institutional Personalization	Expert	32	4.3047
	Typical	238	3.9632
	Novice	38	3.9934
Knowledge Sharing	Expert	32	4.2663
	Typical	238	4.0316
	Novice	38	4.0423

Table 6: The Results of Pearson Correlation for KSM and TK (n=308)

Variables of Knowledge Sharing Mechanism		Overall Tacit Knowledge
Institutional Personalization	Pearson (r)	-.132*
	Sig. (1-tailed)	.010
Institutional Codification	Pearson (r)	-.136**
	Sig. (1-tailed)	.008

*p<0.05, **p<0.01

Table 7: The results of ANOVA for sub traits of personality (n =308)

ANOVA		Sum of Squares	Df	Mean Square	F	Sig.
Conscientiousness	Between Groups	4.596	2	2.298	5.822	.003
	Within Groups	120.379	305	.395		
	Total	124.975	307			
Openness	Between Groups	4.014	2	2.007	7.080	.001
	Within Groups	86.470	305	.284		
	Total	90.485	307			
Personality Traits	Between Groups	2.678	2	1.339	7.545	.001
	Within Groups	54.126	305	.177		
	Total	56.804	307			

*P<0.05

Table 8: The results of sub traits of personality among expert, typical and novice (n =308)

Variables	Group	N	Mean
Conscientiousness	Expert	32	4.0125
	Typical	238	3.6765
	Novice	38	3.5105
Openness	Expert	32	4.3477
	Typical	238	3.9806
	Novice	38	3.9441
Personality Traits	Expert	32	4.3095
	Typical	238	4.0192
	Novice	38	3.9586

Table 9: The results of Correlation between Personality Traits, Knowledge Sharing Mechanism and Managerial Tacit Knowledge (n=308)

Variables		Agreeableness	Conscientiousness	Openness	Personality Traits
Managing Self	r	-.097*	-.099*	-.055	-.101*
	Sig.	.045	.042	.166	.038
Managing Task	r	.175**	.044	.061	.116*
	Sig.	.001	.221	.143	.021
Managing Others	r	-.136**	-.120*	-.144**	-.167**
	Sig.	.009	.018	.006	.002
Managerial Tacit Knowledge	r	-.024	-.085	-.068	-.072
	Sig.	.341	.069	.117	.103
Institutional Codification	r	.252**	.133**	.253**	.271**
	Sig.	.000	.010	.000	.000
Institutional Personalization	r	.203**	.136**	.235**	.244**
	Sig.	.000	.008	.000	.000
Knowledge Sharing Mechanism	r	.350**	.198**	.387**	.399**
	Sig.	.000	.000	.000	.000

Correlation at the **0.01, *0.05(1tailed)